Amendments to the Drawings:

The attached sheets of drawings include changes to FIGS. 2, 7, 8, 12, 13, and 14 in which "iSCSI" has been changed to --SCSI OVER IP-- where ever "iSCSI" originally appeared in the drawings. This change is in response to the Examiner's assertion on page 2 of the Official Action that "iSCSI" is a trademark. Since applicants did not intend for "iSCSI" to indicate a trademark, "iSCSI" is being replaced by more generic terminology. Support for this change is found on page 3 lines 4-5 of applicants' specification as originally filed.

REMARKS/ARGUMENTS

On pages 2-3 of the Official Action, the specification was objected to because of a number of informalities. In response, the specification has been amended to correct the typographical errors indicated in the Official Action and to specifically identify "UNIX", Linux," and "Microsoft Windows" as trademarks, and to substitute generic terminology for "iSCSI". It is believed that "NFS" became an open industry standard since Feb. 2, 2000 when Sun Microsystems released rights to the NFS trademark. See reference C1 cited in applicants' Information Disclosure Statement filed with this Amendment. It is believed that CIFS became an open industry standard since about June 13, 1996 when Microsoft published its CIFS technology. See reference C4 cited in applicants' Information Disclosure Statement filed with this Amendment. It is also believed that "iSCSI" because an open industry standard since about April of 2004. See reference C6 cited in applicants' Information Disclosure Statement filed with this Amendment.

On pages 3 to 5 of the Official Action, claims 2, 5, 6-7, 8-10, 12-13, 17-19, 20, and 48 were objected to because of a number of informalities. The claims have been amended as suggested in the Official Action.

On page 5-6 of the Official Action, claims 5-8, 10-12, 17-20, 22-23, 30-32, 35, and 37-49 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite. In response, the language of claim 5 has been amended to specify that the file server is copying the file over the network. Claims 10, 22, 35, and 45 have been amended to define "NFS" as the Network File System. NFS is an open industry standard, as evidenced by references C1, C2, and C3 cited in applicants' Information Disclosure Statement submitted herewith. Claims 11-12 and 22-23 have

been amended to remove the trademarks "UNIX", "Linux", and "Windows". The language of claim 17 has been amended to define that "data" in line 3 is "new data." Support for "new data" is found on page 17 lines 1-3 of applicants' specification. Claims 30 and 31 have been amended to recite "one of said clients" and to recite the writing of "new data" and to recite that the file server is copying data "over the network". The language of claim 37 has been amended to recite "at least one of said clients". Claim 43 has been amended to recite "new data". Claim 48 has been amended to remove "iSCSI protocol" and substitute "Small Computer System Interface (SCSI) protocol over IP" to obviate the issue of whether or not "iSCSI" is a trademark. Support for this change is found in applicants' specification on page 3 lines 4-5.

On page 7 of the Official Action, claims 1-4 and 9-13 were rejected under 35 U.S.C. 101 for being directed to non-statutory subject matter for failing to produce a tangible result. In response, claims 1-4 and 12-13 have been cancelled, and claims 9-11 have been amended to depend directly or indirectly from claim 8 so as to incorporate the tangible results of claim 8.

On page 8 of the Official Action, claims 1-5, 9-17, 21-27, 30, and 34-36 were rejected under 35 U.S.C. 102(e) as being anticipated by Chen et al. (U.S. 7,076,509). In response, claims 1-5, 12-17, and 24-26 have been cancelled, claims 9-11 have been amended to depend directly or indirectly from claim 8, claims 21-23 have been amended to depend from claim 20, claim 27 has been re-written in independent form and amended to include the limitations of claim 25 and to further distinguish Chen, claim 30 has been amended to depend from claim 27, and claims 34-36 have been amended to depend from claim 27.

With respect to claims 27 and 40, these claims have been amended to clearly distinguish Chen by specifying that the attributes of the virtual SCSI direct access storage device and the

data of the virtual SCSI direct access storage device are stored together in a single file; and the attributes of the virtual SCSI direct access storage device include a specification of an internal organization of the virtual SCSI direct access storage device, and the specification of the internal organization of the virtual SCSI direct access storage device is stored in the single file. This is shown in applicants' FIG. 5.

Chen shows in his FIG. 7 various attributes and data for a virtual device stored in a LUN inode and other inodes linked to the LUN inode. However, these attributes do not include a specification of the internal organization of the virtual SCSI direct access storage device.

The applicants' specification, page 11 line 13 to page 12 line 13, describes the internal organization of the virtual SCSI direct access device as follows:

> Moreover, the storage object attributes may include configuration information, such as a location (bus, target and LUN) of the storage object, and an internal organization of the storage object, such as a level of redundancy in an array of disk drives (RAID level) and a striping scheme. The specified internal organization of the storage object could be used as a guide or specification for mapping of the data storage area 87 of the container file 87 to storage in the cached disk array (49 in FIG. 2).
>
> The various RAID levels include: no redundancy (level 0); mirrored disks (level 1); Hamming code for error correction (level 2); single check disk per group (level 3); independent reads and writes (level 4); spread data/parity over all disks (no single check disk)(level 5). These various RAID levels are described in Patterson et al., "A Case for Redundant Arrays of Inexpensive Disks (RAID)," Report No. UCB/CSD 87/391, Computer Science Division (EECS), University of California, Berkeley, California, December 1987, pp. 1-24, incorporated herein by

> reference. Raid levels 2 to 5 imply certain patterns of striping of data and check information across the disk array. The striping pattern may affect access performance in various ways depending on whether the access is read or write, or intermittent or continuous. For example, a striping pattern for continuous media files is shown in FIG. 21 of Venkatesh et al., U.S. Patent 5,974,503 issued Oct. 26, 1999 and entitled "Storage and Access of Continuous Media Files Indexed as Lists of RAID Stripe sets associated with file names," incorporated herein by reference. Striping patterns for mirrored disks are disclosed in Venkatesh et al., U.S. Patent 6,397,292 issued May 28, 2002, and entitled "Asymmetrical Striping of Mirrored Storage Device Arrays and Concurrent Access to Even Tracks in the First Array and Odd Tracks in the Second Array To Improve Data Access Performance," incorporated herein by reference.

Nor does Chen suggest that the LUN file should include a specification of an internal organization for the virtual LUN such as a RAID level or a striping scheme or other specification for mapping of the data storage area of the LUN container file to storage in a disk array. Instead, Chen Col. 10 lines 30-42 discloses that each volume 550 is constructed from an array of physical disks 530 organized as a RAID group. Chen Col. 10 lines 43-47 teaches that within each volume may be stored one or more virtual disks (vdisks). A vdisk is a special file type in a volume that derives from a plain (regular) file, but that has associated export controls and operation restrictions that support emulation of a disk. Thus, in Chen, the RAID redundancy or striping is disclosed as a property of the volume upon which the file system is built, rather than as an attribute of the vdisk file.

On page 17 of the Official Action, claims 6-8, 18-20, and 31-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,076,509 B1) as applied to claims 1,

5, 14, 17, 24, and 30 above, and further in view of Veritas Backup Exec for Window Servers™ Administrator's Guide (hereinafter VERITAS). In response, claims 6 and 18 have been cancelled, claim 31 and 32 now depend indirectly from claim 27 as amended, and claims 7 and 19 have been amended to depend from claims 8 and 20.

With respect to claims 8 and 20, page 17 of the Official Action indicates that a difference between the proposed combination of Chen et al. and VERITAS is that claims 8 and 20 call for the client pausing the writing of data after a commit, and the client initiating the copying of the file by sending the command. However, claims 8 and 20 also specify that the client uses the block level protocol over a first TCP/IP connection over the network to access the storage object, and the client initiates the step of the copying of the file by sending a command over a second TCP/IP connection. This is different from the set-up in VERITAS where a client could use one TCP/IP connection to write data to a server, and the system administrator could use another TCP/IP connection from a remote system to send a backup job to the server.

Page 18 of the Official Action says that a general concept of pausing write access to a file so that it may be copied is well known in the art and taught by VERITAS (pg. 956 'Snapshot Support", in the first paragraph it teaches that writing activity must be momentarily suspended so that a snapshot may be taken. However, such snapshot technologies ("momentarily suspend write activity to a hard drive so that a point in time, or snapshot of a volume can be created") function at the server. Other technologies that close any open files before making a snapshot do not suggest that the client should use a block level access protocol over the network to write data to the storage object.

Claims 8 and 20 recite functions at the client in addition to a copy facility at the server. As recited in the applicants' claims, activity on the client is being coordinated with the copy process on the server using two separate TCP/IP connections. Chen and VERITAS are totally devoid of any suggestion of the claimed activity on the client being coordinated with the snapshot copy process on the server. Where the prior art references fail to teach a claim limitation, there must be "concrete evidence" in the record to support an obviousness rejection. "Basic knowledge" or "common sense" is insufficient. In re Zurko, 258 F.3d 1379, 1385-86, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001).

On page 18 of the Official Action, claims 7, 19, and 32 were rejected as being unpatentable over Chen et al. (U.S. 7,076,509) and VERITAS as applied to claims 1, 5, 14, 17, 24, and 30 above, and further in view of Banerjee (U.S. 2002/0199000 A1). Applicants respectfully traverse. Page 18 of the Official Action indicates that a difference between the proposed combination of Chen et al. and VERITAS and the applicants' claims is that the applicants' claims recite that the two TCP/IP connections are concurrent. Banerjee is cited for showing the general concept of two TCP/IP connections to different ports being concurrent is well known in the art. However, Banerjee is dealing with a problem of managing parallel data transfer through multiple sockets to provide scalability to a computer network. (Banerjee, title.) In contrast, the present invention is using different TCP/IP connections for different functions or protocols. Banerjee also is attempting to facilitate the use of multiple sockets and avoid monopolization of a socket by releasing the socket as soon as data from a client request has been sent to a server application. (Banerjee, abstract.) This seems to teach away from a first TCP/IP

connection being concurrent with a second TCP/IP connection, as defined in applicants' claims 7, 19, and 32.

On page 19 of the Official Action, claim 28 was rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,076,509 B1) as applied to claims 24 and 27 above, and further in view of Busser (U.S. 2002/0095616 A1). Applicants respectfully traverse. Busser is cited for the general concept of storing RAID level information in metadata files. However, the RAID level information in Busser paragraph [0029] appears to be on a disk header (FIG. 2) with partition information and not in a metadata file. More importantly, it is not seen where Busser suggests that the RAID level information should be seen as an attribute of a virtual device or file in a file system rather than as an attribute of the logical volume or an array of disk drives. Thus, there is nothing in Busser that suggests modification of the teaching in Chen et al. that a logical volume is configured for a RAID level and then a file system is built on the logical volume so that the RAID level is not seen as an attribute of a file or an attribute of a virtual LUN.

On page 20 of the Official Action, claim 29 was rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,076,509 B1) as applied to claims 24 and 27 above, and further in view of Tichy et al. (U.S. 2006/0101025 A1). Applicants respectfully traverse. Tichy is cited for the general concept of storing striping pattern information in metadata files, where the default layout, involving striping file blocks is stored in a metadata manger. However, Tichy is dealing with a distributed file system comprising a plurality of computer nodes and a plurality of input/output nodes, and striping the file blocks over the I/O nodes. Tichy paragraph [0116] says: "If the file is created and the compute node doesn't specify a layout for the file, the default layout (striping the blocks in round-robin manner over all I/O nodes) is chosen. If a file layout is

specified, it is stored at the metadata manager. Each subsequent re-open will retrieve the layout information along with a unique file descriptor." It is not understood how this would suggest that the layout information for a file is to be stored in the file itself, as is now specified in the base claim 27 as amended.

On page 20 of the Official Action, claim 33 was rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,086,509 B1) as applied to claim 24 above, and further in view of Chen et al. (U.S. 7,010,553 B2). In response, claim 33 has been amended to depend on claim 27 as amended. It is respectfully submitted that Chen et al. (U.S. 7,010,553 B2) does not suggest the amendments to claim 27.

On page 21 of the Official Action, claims 37-40 and 45-49 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 7,086,509 B1) as applied to claim 24 above, and further in view of Chen et al. (U.S. 7,010,553 B2). In response, claims 37-39 have been cancelled, and claim 40 has been amended in a similar fashion as claim 27, and claims 45-49 have been amended to depend on claim 40. It is respectfully submitted that Chen et al. (U.S. 7,010,553 B2) does not suggest the amendments to claim 40.

On page 24 of the Official Action, claim 41 was rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,086,509 B1) and Chen et al. (U.S. 7,010,553 B2) as applied to claims 37 and 40 above, and further in view of Busser. Applicants respectfully traverse, for the reasons given above with respect to the rejection of applicant's claim 28.

On page 24 of the Official Action, claim 42 was rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,086,509 B1) and Chen et al. (U.S. 7,010,553 B2) as applied

to claims 37 and 40 above, and further in view of Tichy. Applicants respectfully traverse, for the reasons given above with respect to the rejection of applicant's claim 29.

On page 25 of the Official Action, claim 43 was rejected 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,086,509 B1) and Chen et al. (U.S. 7,010,553 B2) as applied to claim 37 above, and further in view of VERITAS. In response, claim 43 has been amended to depend on claim 40. It is respectfully submitted that VERITAS does not suggest the amendments to claim 40.

On page 26 of the Official Action, claim 44 was rejected 35 U.S.C. 103(a) as being unpatentable over Chen et al. (U.S. 7,086,509 B1) and Chen et al. (U.S. 7,010,553 B2) and VERITAS as applied to claims 37 and 43 above, and further in view of Banerjee. In response, claim 44 has been amended to depend on claim 40. It is respectfully submitted that neither VERITAS nor Banerjee would suggest the amendments to claim 40.

In view of the above, it is respectfully submitted that the application is in condition for allowance. Reconsideration is respectfully requested, and early allowance is earnestly solicited.

Respectfully submitted,

/ Richard C. Auchterlonie /

Richard C. Auchterlonie
Reg. No. 30,607

NOVAK DRUCE & QUIGG, LLP
1000 Louisiana, 53rd Floor
Houston, TX 77002
713-571-3460